

Ethnicity and Adolescent Pathways to Alcohol Use*

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ABSTRACT. Objective: This study examined the influence of ethnicity on factors affecting alcohol-use behaviors in a community sample of white, black, and Hispanic youth ($N = 323$). Conduct problems, positive alcohol expectancies, and socioeconomic status were expected to mediate the effect of negative affectivity and a paternal history of substance dependence on the age at onset of regular drinking and the frequency of drinking. **Method:** Subjects ages 14-21 (57.9% female; 60.7% white) were interviewed along with their fathers at baseline (Time 1), and subjects only were interviewed again 5 years later (Time 2). A structural equation model was used to test a deviance proneness model for predict-

ing drinking behaviors and to evaluate differences on model paths by ethnicity. **Results:** Ethnic group membership moderated mediational pathways linked to the onset of regular alcohol use but not to drinking frequency. An increase in the number of childhood conduct problems predicted an earlier age at onset of regular drinking for blacks, whereas more positive alcohol expectancies were associated with an earlier initiation of regular drinking for whites and Hispanics. **Conclusions:** Findings from this study provide evidence that risk factors for alcohol use in adolescents and young adults vary according to ethnic group. (*J. Stud. Alcohol Drugs* 70: 337-345, 2009)

THE INITIATION OF REGULAR DRINKING and the ages at peak quantity and frequency of drinking typically occur during adolescence and early adulthood (Chen et al., 2004/2005; O'Malley et al., 1998). Importantly, adolescents whose biological parent(s) has (have) a history of alcohol dependence are at risk for greater alcohol use and alcohol-related consequences in these developmental periods (Chassin et al., 1991; Sher et al., 1991). The deviance proneness model proposes multiple pathways to the development of alcohol involvement for individuals who have a family history of alcoholism or drug dependence (Hesselbrock and Hesselbrock, 2006; Sher, 1991). Under this model, alcohol use is part of a more general deviant pattern that is established in childhood and associated with psychological characteristics and the individual's social environment (Sher and Gotham, 1999; Sher et al., 2005). A parental history of substance dependence also influences the offspring's risk for increased alcohol use and involves both genetic heritability and family environment (e.g., poor parenting; Hesselbrock and Hesselbrock, 2006). Social relationships with deviant peers may also predict the development of alcohol abuse and dependence (Sher et al., 2005).

Personality variables in the deviance proneness model are proposed to influence the relationship of a parental history of substance dependence to developing alcohol involvement and alcohol problems in youth. Childhood conduct

problems, associated with the temperament trait behavioral undercontrol and related to the constructs of delinquency and disinhibition, have been identified as a key mediator for the effect of a family history of alcoholism on the risk for developing alcohol-use behaviors (Barnow et al., 2002; Hussong et al., 1998; Ohannessian and Hesselbrock, 2007, 2008; Sher et al., 1991). The role of conduct problems in predicting alcohol use and the initiation of alcohol use for youth is well supported (Hesselbrock and Hesselbrock, 2006; Kuperman et al., 2005; Schuckit et al., 2006; Sher, 1991). The trait of negative affectivity (i.e., an individual's tendency toward depression and neuroticism) has also been positively associated with adolescent and young adult conduct problems and their drinking frequency (Schuckit et al., 2006). However, it is less clear whether neuroticism mediates the association between parental alcohol/substance history and alcohol use (Hussong et al., 1998; Ohannessian and Hesselbrock, 2008; Sher et al., 1991).

Alcohol expectancies are an important construct in the deviance proneness model, linking a family history of alcoholism and alcohol-related outcomes. Knowledge and beliefs about the effects of alcohol begin to develop in early to middle childhood and are more common in children with parental alcohol dependence (Zucker et al., 1995). Sher et al. (1991) identified positive alcohol expectancies or beliefs about the positive effects of alcohol as a mediator in a deviance proneness model for behavioral undercontrol and negative affect in predicting drinking behavior. Individuals with problem behaviors endorsed more positive alcohol expectancies, typically consumed more alcohol, and experienced more alcohol-related problems (McCarthy et al., 2001; Meier et al., 2007).

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Conversely, absent from the deviance proneness model as originally proposed by Sher (1991) is an account of social factors other than family environment and peer associations that may predict adolescent alcohol involvement. In particular, socioeconomic status, defined by such indicators as parental occupation, education, and/or income, has often been negatively associated with conduct problems and alcohol involvement. Adolescents from families with a lower occupational status and reduced income are reportedly more likely to be involved in heavy drinking compared with adolescents from higher socioeconomic groups (Droomers et al., 2003; Lowry et al., 1996). Low parental education and family income also predict conduct disorders in children and adolescents (Farrington, 2005; Velez et al., 1989). Thus, the role of socioeconomic status in affecting alcohol-use behaviors may be particularly important in the examination of developmental pathways to alcohol use for black, white, and Hispanic adolescents. Ethnic variations in alcohol-use behaviors may partly be attributed to socioeconomic differences among various ethnic groups (Buka, 2002).

Differences in alcohol-use behaviors by ethnicity have been documented for adolescents and young adults (Flewelling et al., 2004; Herd, 1990). A number of epidemiological studies have found that blacks, compared with whites and Hispanics, report drinking less alcohol and a later age at onset of drinking. O'Malley et al. (1998), in the Monitoring the Future project, for example, described rates of drinking and being drunk in 12th graders to be highest for whites and lowest for blacks, with Hispanics in the middle. In another study, the percentage of drinkers exceeding the daily drinking limit for 18- to 24-year-olds was highest for whites, followed by Hispanics, and then blacks (Chen et al., 2004/2005). According to the National Survey on Drug Use and Health, among youth (ages 12-20) who reported drinking, whites had an earlier average age at initiation compared with Hispanics and blacks (Faden, 2006).

Explanations for ethnic group differences in alcohol-use behaviors have been proposed (Galvan and Caetano, 2003), but few studies have compared black, white, and Hispanic youth on predictors of alcohol use (Donovan, 2004; Godette et al., 2006). Slutske et al. (2002) identified black female adolescents as less likely than white female adolescents to endorse positive alcohol expectancies. Vega et al. (1993) reported both similarities (e.g., low family pride and attitudes toward nonnormative behaviors) and differences (e.g., depression and delinquency) in risk factors predicting adolescent alcohol use in four ethnic groups.

The current study evaluated a deviance proneness model for ethnic group differences. The study fills an important gap in the literature by investigating several known risk factors thought to influence the development of alcohol use in a diverse sample of adolescents and young adults. We examined the effect of ethnicity on hypothesized relationships (see Figure 1) among paternal substance dependence,

paternal educational attainment (i.e., a proxy for socioeconomic status), negative affect, conduct problems, positive alcohol expectancies, and drinking outcomes. Black, white, and Hispanic adolescents and young adults were compared in predicting the age at initiation of regular drinking and the frequency of alcohol use.

Method

Participants

An ethnically diverse community sample ($N = 323$) of male and female adolescents and young adults from the greater Hartford area was examined. Subjects who self-identified as white ($n = 196$), black ($n = 79$), or Hispanic ($n = 48$) were included in the study; other ethnicities were excluded because of their small group size ($n = 15$).

Participants were ages 14-21 at the beginning of the study. Baseline data (Time 1) were collected from 1993 to 1998, with follow-ups (Time 2) conducted from 1998 to 2003. At baseline, adolescent participants were recruited along with their biological fathers. Among the fathers, approximately 67% had a lifetime history of alcohol or drug dependence according to the Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised (DSM-III-R; American Psychiatric Association, 1987). Adolescents and young adults with a maternal history of alcohol or drug dependence were excluded from the sample to minimize the possible influence of prenatal alcohol exposure. At the time of the Time 1 interview, 54% of the adolescents were living with their mother and biological father. When the father was absent from the home, the primary reasons for the absence were separation/divorce (26.5%) and parents never married (12%). However, only 8.7% of the adolescents reported never being able to see their father.

Procedures

Participants were recruited directly through outreach efforts to high schools, colleges, the YMCAs/YWCAs, police athletic leagues, and teen centers, as well as through newspaper advertisements. A potential participant or his or her parent was invited to contact a research assistant for additional information. Adolescents who had a history of DSM-III-R alcohol- or drug-use disorders at the time of recruitment were excluded from the study. Eligible participants and fathers who volunteered were scheduled for an appointment and signed consent forms approved by the University of Connecticut Health Center Institutional Review Board. A research assistant contacted participants again approximately 5 years after baseline to complete a follow-up interview. The Time 2 completion rate was 85% (Ohannessian and Hesselbrock, 2007). Fathers were not interviewed at Time 2.

Measures

Outcome variables for the analysis (i.e., age at onset of regular drinking and the frequency of drinking) were collected from participants at Time 2, whereas all other variables were collected at baseline. Subjects answered questions about their drinking behaviors, negative affect, conduct problems, and alcohol expectancies. Fathers provided information regarding their own history of substance use and/or dependence and level of educational attainment.

Ethnicity. Subjects were asked to self-identify their ethnic background (i.e., white, black, or Hispanic).

Adolescent and young adult drinking. The age at onset of regular drinking for the adolescents was defined as the age when their drinking began to occur at least once a month for 6 months or more. The frequency of drinking was characterized by the current number of days a week each subject reported drinking any wine, beer, or distilled spirits. Alcohol-use behavior was measured at both Time 1 and Time 2. At Time 1, 51% of the adolescents reported never having used alcohol at any time in their life, but this decreased to 21.3% at Time 2. Similarly, 18.1% reported alcohol use several times a month at Time 1, and this rate almost doubled (35%) at Time 2.

Negative affect. The Positive and Negative Affect Schedule (Watson et al., 1988) was used to measure each participant's general level of negative affect. Words used to describe negative affect were afraid, scared, nervous, jittery, irritable, hostile, guilty, ashamed, upset, and distressed. Subjects rated the extent to which each of these words conveyed how they usually felt by using a scale ranging from 1 (very slightly or not at all) to 5 (extremely). Scores associated with each word were summed to create a negative affect scale, ranging from 10 to 50. The negative affect scale shows internal consistency ($\alpha = .87$) and excellent convergent ($r = .94$) and discriminant ($r = -.08$) validity when compared with other brief affect measures (Watson et al., 1988).

Conduct problems. The 13 conduct symptoms from the DSM-III-R criteria for conduct disorder were summed to define conduct problems. Conduct disorder items were obtained from the Semi-Structured Assessment for the Genetics of Alcoholism. This assessment is a structured psychiatric interview that covers the major diagnostic disorders in the DSM-III-R. It has good test-retest reliabilities ($\kappa = .70-.90$) and shows good concurrent validity ($\kappa = .63-.85$) for lifetime alcohol, cocaine, and heroin dependence and antisocial personality disorder diagnoses (Bucholz et al., 1994; Hesselbrock et al., 1999).

Alcohol expectancies. The Alcohol Expectancies Questionnaire for Adolescents (Brown et al., 1987) was used to assess beliefs about the expected positive and negative effects of alcohol. This assessment's global positive subscale was used and involved yes/no answers to such statements as, "drinking makes me feel good" and "I like the taste of some

alcoholic beverages." Global positive expectancy scores were calculated by summing all positive individual items. The Alcohol Expectancies Questionnaire for Adolescents has acceptable internal consistency ($\alpha: .47-.82$) and test-retest reliability (global positive subscale: $r = .61$) and shows convergent validity with drinking behaviors (Brown et al., 1987).

Paternal substance dependence. All fathers completed the Semi-Structured Assessment for the Genetics of Alcoholism, from which lifetime DSM-III-R alcohol- and drug-use disorder diagnoses were identified. A positive diagnosis of lifetime dependence for alcohol, cocaine, or heroin defined paternal substance dependence.

Paternal educational attainment. Each father indicated the highest grade he completed in school. A father's level of education served as a proxy for his offspring's socioeconomic status.

Data analysis

Descriptive statistics were generated for Time 1 and Time 2 variables using SPSS Version 15.0 (SPSS Inc., Chicago, IL). One-way analysis of variance tests assessed ethnic group differences for continuous variables, and chi-square tests were used for discrete variables. The Brown-Forsythe statistic was reported for those continuous variables violating the homogeneity of variance assumption. The probability value of $p < .05$ determined statistical significance for all analyses.

The deviance proneness model (see Figure 1), developed from our review of relationships and predictors reported in the literature, was tested using structural equation modeling in AMOS 7.0 (Arbuckle, 2006). We investigated ethnic group differences in (1) the effects of a paternal history of substance dependence, negative affect, and parental educational attainment (i.e., independent variables) on conduct problems and alcohol expectancies (i.e., mediator variables); (2) the effects of independent variables on alcohol-use behaviors (i.e., outcome variables at Time 2; age at onset of regular drinking and drinking frequency); and (3) the effects of the mediator variables on the outcome variables. The interaction of ethnicity with the mediational relationships of the deviance prone model (i.e., moderated mediation; Flora et al., 2007) was examined by testing for group differences on these three sets of paths.

All variables in the study model were observed. The full-information maximum likelihood method was used to estimate the model. Fifty-nine participants (18.3%) of the total 323 could not be located to complete a Time 2 interview. The model chi-square statistic (χ^2_M), root mean square error of approximation (RMSEA), and comparative fit index (CFI) served as measures of overall model fit. RMSEA values less than .05, CFI values greater than .95, and a statistically nonsignificant model chi-square statistic indicated a well-fitting model (Byrne, 2001).

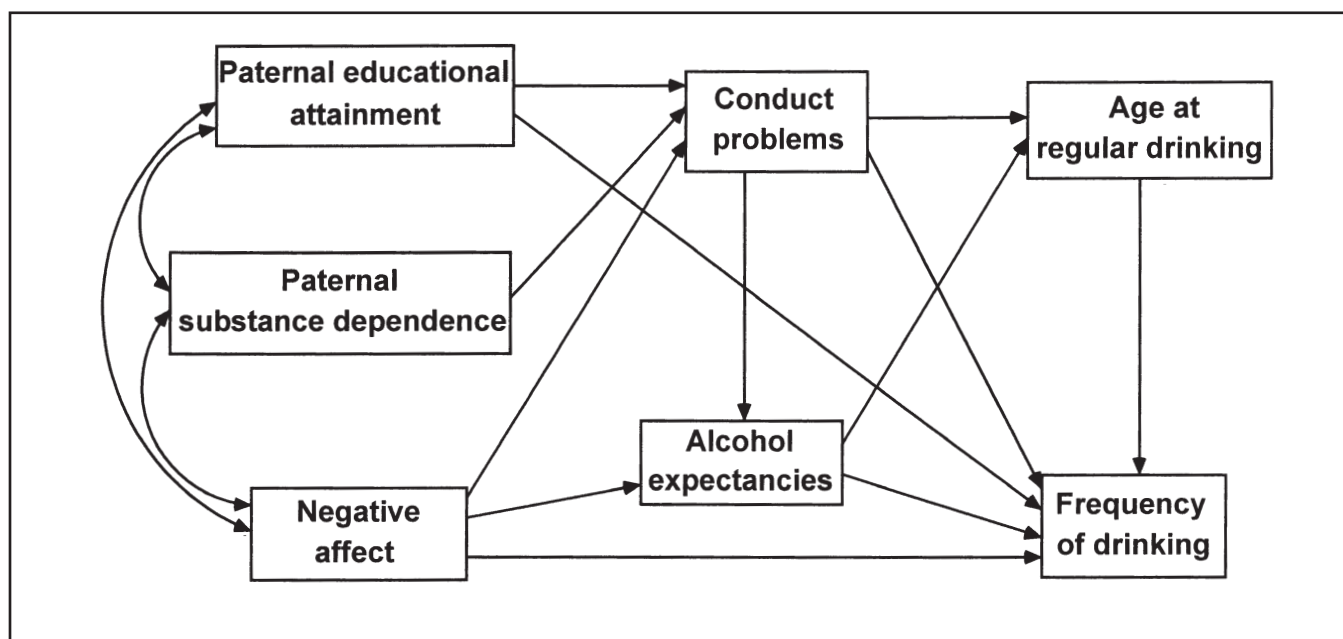


FIGURE 1. Hypothesized deviance proneness model

A series of nested model comparisons was conducted to test ethnic group differences among black, white, and Hispanic adolescents and young adults on model paths. Cross-group equality constraints were first placed on all paths from the independent variables to mediators, then on paths from independent variables to outcome variables, and finally on paths from mediators to outcome variables. When paths were found to be equal across groups, equality constraints were held in place for the remainder of the testing process. Alternatively, more targeted equality constraints were used to pinpoint group differences when paths were found to vary.

CFI and RMSEA values and the chi-square difference test (χ^2_D) were used to evaluate the change in model fit at each step. Reduced CFI values, elevated RMSEA values, and a statistically significant χ^2_D indicated group differences on constrained paths. The false discovery rate procedure was used to evaluate statistical significance for each χ^2_D , controlling the Type I error rate for the multiple tests (Cribbie, 2000). Unconstrained path coefficients were used to describe group differences, and constrained path coefficients were evaluated when equality across groups was identified. Unstandardized coefficients were recounted for both unconstrained and constrained paths, as recommended by Kline (2005) when comparing parameter estimates across groups.

Results

Sample characteristics

The sample ($N = 323$) at baseline was 57.9% female, with a mean (SD) age of 16.5 (1.61) years. Nearly 25% of

the participants were black, 60.7% were white, and 14.9% were Hispanic. Table 1 summarizes sample characteristics for subjects by ethnic group membership. White youth had higher positive alcohol expectancies and their fathers completed a higher level of education compared with Hispanics and blacks, and Hispanic participants were younger than white and black participants (p 's < .001). A larger percentage of Hispanic participants (75.0%) compared with whites (60.8%) and blacks (60.6%) had a father who met the criteria for substance dependence, although this difference was not significant, possibly because of the small number of Hispanics sampled. Alcohol-use behaviors varied by ethnic group membership, with blacks indicating a later age at onset of regular drinking, and whites drinking alcohol on more days per week, compared with other groups (p 's < .01).

Model testing

The hypothesized model (Figure 1) was assessed for model fit in each group simultaneously. Paths omitted from the hypothesized model were tested and those found statistically significant (p 's < .05) were added to the model, including paths from paternal substance dependence to paternal educational attainment and from parental educational attainment to subject's age at onset of regular drinking. Three paths were identified as statistically nonsignificant in all three ethnic groups. These paths (i.e., paternal substance dependence to conduct problems, paternal educational attainment to frequency of drinking, and negative affect to frequency of drinking) were then trimmed from the model.

TABLE 1. Characteristics for participants, by ethnicity

Variable	Ethnicity			Statistic	<i>p</i>
	Black (<i>n</i> = 79) Mean (SD) or %	White (<i>n</i> = 196) Mean (SD) or %	Hispanic (<i>n</i> = 48) Mean (SD) or %		
Female	59.5%	57.7%	56.3%	$\chi^2 = 0.41, 2 \text{ df}$.932
Age, years	16.62 (1.57)	16.70 (1.64)	15.71 (1.29)	$F = 8.92, 2/320 \text{ df}$	<.001
Paternal substance dependence	60.6%	60.8%	75.0%	$\chi^2 = 2.71, 2 \text{ df}$.258
Paternal educational attainment, years ^a	11.98 (1.86)	13.87 (2.53)	11.21 (2.84)	$F = 23.39, 2/241 \text{ df}$	<.001
Negative affect ^b	20.54 (6.05)	22.01 (6.50)	22.44 (6.79)	$F = 1.65, 2/304 \text{ df}$.194
No. of conduct problems	1.63 (1.65)	1.48 (1.79)	1.48 (1.58)	$F = 0.24, 2/319 \text{ df}$.786
Positive alcohol expectancies ^c	3.72 (3.88)	5.77 (4.14)	4.10 (4.33)	$F = 8.42, 2/320 \text{ df}$	<.001
Age at regular drinking onset, years	18.05 (2.59)	16.93 (2.33)	15.94 (1.80)	$F = 5.76, 2/195 \text{ df}$.004
Frequency of drinking ^d	1.14 (1.33)	1.74 (1.46)	0.94 (1.04)	$F = 7.48, 2/261 \text{ df}$.001

Notes: **Bold** indicates statistical significance. The Brown-Forsythe statistic was reported for age and paternal educational attainment. ^aPaternal educational attainment was measured as father's highest grade completed in school; ^bscore on the Positive and Negative Affect Schedule; ^cscore on the Alcohol Expectancies Questionnaire for Adolescents; ^dfrequency of drinking was measured as days per week of drinking alcohol.

Ethnic group differences

Figure 2 provides an illustration of the revised base model tested for ethnic group differences in variables predicting adolescent and young adult alcohol use. All fit indexes suggested good model fit when allowed to simultaneously vary across the three separate groups (see Table 2; unconstrained Model 1). A summary of the nested model equality tests conducted appears in Table 2. There were no group differences

on the paths from paternal substance dependence, negative affect, and paternal educational attainment (i.e., independent variables) to the mediator variables of conduct problems and alcohol expectancies (Model 2: $p = .088$) or on the path from the independent variable paternal educational attainment to the outcome variable age at onset of regular drinking (Model 3: $p = .274$). However, group differences were identified on the paths from the mediators to the alcohol-use outcome variables (Model 4: $p = .005$).

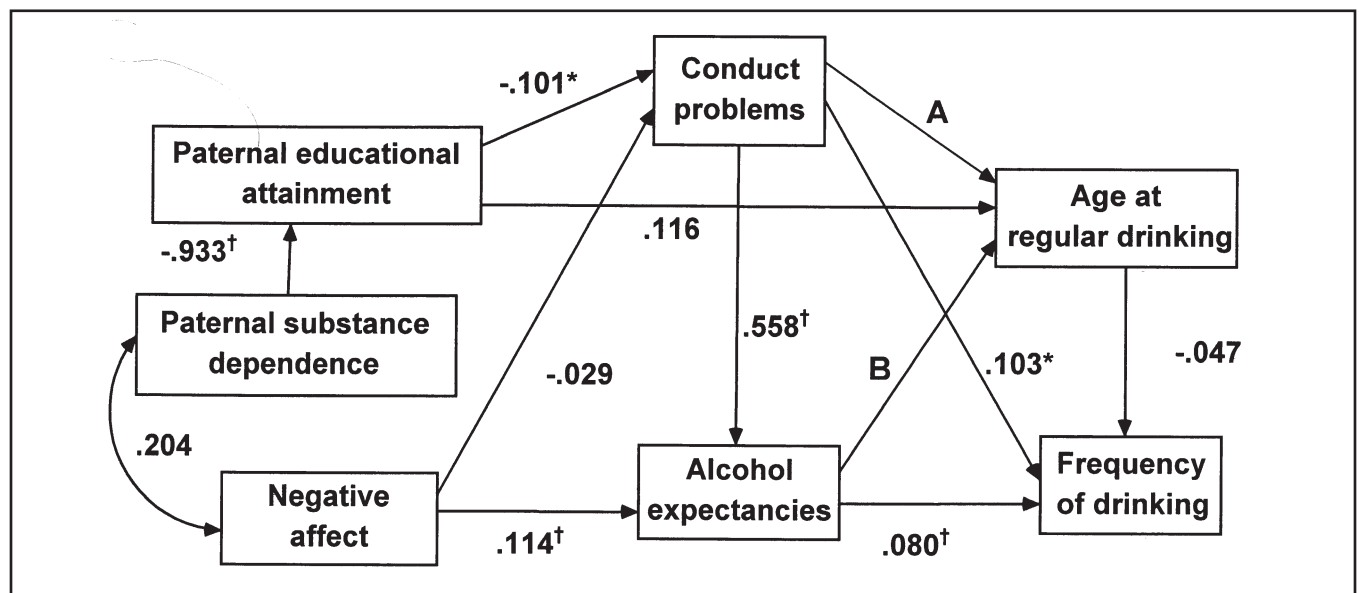


FIGURE 2. Model tested for ethnic group differences in predicting alcohol use. Unstandardized path coefficients for the Final Model tested (see Table 2; Model 9) are reported. Ethnic group differences were identified on Path A (whites: $b = -0.102$; blacks: $b = -0.646^\dagger$; Hispanics: $b = -0.061$) and Path B (whites: $b = -0.155^\dagger$; blacks: $b = 0.150$; Hispanics: $b = -0.271^\dagger$).

* $p < .05$; $^\dagger p < .01$.

TABLE 2. Model fit statistics for equality tests on model paths

Constrained paths	Comparative model	RMSEA	CFI	χ^2_M	χ^2_D	<i>p</i>
1. None (unconstrained)	—	.000	1.000	20.51, 27 df	—	—
2. All IV to mediator paths	Model 1	.000	1.000	36.93, 37 df	16.42 (10)	.088
3. Model 2 + IV to outcome path	Model 2	.006	.994	39.52, 39 df	2.59 (2)	.274
4. Model 3 + all mediator to outcome paths	Model 3	.032	.810	65.17, 49 df	28.24 (12)	.005
5. Model 3 + conduct problems to age at onset path	Model 3	.022	.923	47.53, 41 df	8.01 (2)	.018
6. Model 3 + conduct problems to frequency of drinking path	Model 3	.017	.955	44.81, 41 df	5.29 (2)	.071
7. Model 6 + alcohol expectancies to age at onset path	Model 6	.033	.824	57.98, 43 df	13.18 (2)	.001
8. Model 6 + alcohol expectancies to frequency of drinking path	Model 6	.013	.974	45.22, 43 df	.41 (2)	.813
9. Model 8 + age at onset to frequency of drinking (Final Model)	Model 8	.017	.951	49.16, 45 df	3.94 (2)	.140

Notes: **Bold** indicates statistical significance. Equality constraints were continued for the remainder of testing when paths were invariant across groups. IV = independent variable; RMSEA = root mean square error of approximation; CFI = comparative fit index; χ^2_M = model chi-square statistic; χ^2_D = chi-square difference test. The false discovery rate procedure was used to control for Type 1 error inflation in testing statistical significance.

Specific ethnic group differences were located on the paths from conduct problems (Model 5: $p = .018$) and from positive alcohol expectancies (Model 7: $p = .001$) to age at onset of regular drinking. Other mediators to outcome effects did not vary by ethnicity (i.e., Model 6: $p = .071$; Model 8: $p = .813$; Model 9: $p = .140$). Unconstrained path coefficients suggested different relationships for black youth compared with whites and Hispanics in predicting alcohol use. Conduct problems had a negative relationship with age at onset of regular drinking for blacks ($b = -0.646$, $p = .004$), although this relationship was not significant for whites ($b = -0.102$, $p = .358$) or Hispanics ($b = -0.061$, $p = .721$). Positive alcohol expectancies were negatively related to the age at onset of regular drinking for white ($b = -0.155$, $p < .001$) and Hispanic ($b = -0.271$, $p < .001$) youth but not for blacks ($b = 0.150$, $p = .109$).

In each of the three ethnic groups, a father's positive diagnosis for lifetime substance dependence predicted his reduced educational attainment ($b = -0.933$, $p = .004$). The direct relationship between paternal educational attainment and the age at onset of regular drinking in youth was not significant ($b = 0.116$, $p = .071$). Instead, a father's educational level was mediated by adolescent and young adult conduct problems ($b = -0.101$, $p = .024$). Conduct problems had a positive relationship with alcohol expectancies ($b = 0.558$, $p < .001$) and predicted the frequency of drinking ($b = 0.103$, $p = .031$). Negative affect was mediated by alcohol expectancies ($b = 0.114$, $p = .001$). More positive alcohol expectancies predicted a greater frequency of drinking ($b = 0.080$, $p < .001$). The relationships of negative affect to

conduct problems ($b = 0.029$, $p = .060$) and age at onset of regular drinking to frequency of drinking ($b = -0.047$, $p = .267$) were not statistically significant.

Discussion

This study examined the relationship of ethnic group membership (i.e., black, white, and Hispanic ethnicity) to factors associated with adolescent and young adult drinking behaviors in a deviance proneness model. Moderated mediation was identified for the tested deviance proneness model, occurring when either a relationship between an independent variable and mediator or a relationship between a mediator and an outcome variable varies according to a moderator (Flora et al., 2007). We found a moderating effect for ethnicity on the paths from the mediators—alcohol expectancies and conduct problems—to the drinking outcome of age at onset of regular drinking.

Positive alcohol expectancies predicted the age at onset of regular drinking for whites and Hispanics, whereas conduct problems predicted onset of regular drinking for blacks. Meier et al. (2007) similarly identified ethnicity as a moderator of relationships between delinquency, positive alcohol expectations, and age at alcohol initiation. In their study, alcohol expectancies had a stronger relationship to alcohol initiation for whites and Hispanics compared with blacks. However, contrary to current findings, white youths showed a stronger relationship between conduct problems and alcohol initiation than black youths. This variation in the relationship between delinquency/conduct problems and alcohol use for the two

studies may be accounted for by the use of different drinking outcomes (e.g., age at alcohol initiation vs age at onset of regular drinking), as well as differences in the assessment of behavior problems (delinquency vs conduct problems). Further studies comparing black, white, and Hispanic youth on factors associated with alcohol use are needed to clarify the effect of ethnicity on the ages at alcohol initiation and onset of regular drinking.

Despite these potentially meaningful group differences, this testing of the deviance proneness model identified more similarities than differences across ethnic groups in predicting alcohol-use behaviors for adolescents. Bersamin et al. (2005) reported more similarities than differences by ethnic group in the relationships of community, family, school, peer, and individual risk factors to heavy episodic drinking. Those ethnic group differences observed were primarily a variation in the magnitude of associations, rather than a difference of directionality. For example, delinquent behavior was more strongly associated with the frequency of heavy episodic drinking for white adolescents than blacks (Bersamin et al., 2005). Meier et al. (2007) also identified differences by ethnicity in the relationships of positive alcohol expectancies and delinquency to both drinking frequency and heavy episodic drinking frequency, with stronger relationships for black and Hispanic youths relative to white youths. The current study identified no differences by ethnic group membership in associations between variables predicting the frequency of alcohol use, showing an inconsistency of findings across the three studies.

Additionally in all ethnic groups, alcohol-use behaviors were not directly influenced by the adolescent's socioeconomic status, although paternal educational attainment indirectly affected alcohol-use behaviors through conduct problems. Fothergill and Ensminger (2006), in a longitudinal study of black youths, similarly identified an indirect relationship for socioeconomic status and substance-use problems through years of education. Several other studies have identified ethnic group differences in the relationship of ethnicity and socioeconomic status to alcohol-use behaviors; however, the findings are seemingly inconsistent. Bersamin et al. (2005) and Gilman et al. (2008) found the socioeconomic status indicators of family poverty and education (i.e., not having a college degree) had a stronger association for blacks than whites with problem drinking. In contrast, Skager and Fisher (1989) reported a higher frequency of alcohol and other drug use in high socioeconomic status, predominantly white high schools, when compared with low socioeconomic status, predominantly minority high schools.

This study found that whites had higher positive alcohol expectancies compared with Hispanics and blacks. The literature on the relationship of ethnicity to alcohol expectancies in youths has mixed findings (Chung et al., 2008). Slutske et al. (2002) reported, among female adolescents and

young adults, lower scores for blacks than whites on positive beliefs about alcohol, whereas Meier et al. (2007) reported lower positive alcohol expectancies for whites compared with blacks and Hispanics in a sample of male and female youths. We also found that alcohol-use behaviors varied by ethnic group membership. Blacks reported a later age at onset of regular drinking, and whites reportedly drank on more days per week compared with other groups. These findings are supported by previous research identifying different alcohol-use patterns by ethnicity (Chen et al., 2004/2005; Griffin et al., 2000; O'Malley et al., 1998).

The discussion of the findings presented here should be considered in light of the study's strengths and limitations. The 5-year longitudinal design of the study offers some evidence of causal relationships in predicting alcohol-use behaviors. The modeled risk factors were collected 5 years before the drinking measures, providing a time ordering for variables. The ethnic diversity of the sample is an additional strength for the study as longitudinal studies directly comparing at-risk youth from different ethnicities in relation to adolescent and young adult alcohol use are uncommon (Griffin et al., 2006; Vega et al., 1993). However, the sample sizes for the three ethnic groups are not especially large, possibly reducing power for detecting other possible group differences. Respecifications made a posteriori to the hypothesized model also may have capitalized on chance and require replication in other populations. As well, the absence of other important determinants of adolescent drinking (e.g., peer use) in the tested deviance proneness model identifies it as one of various plausible models.

Identifying the ethnic group differences in factors that affect alcohol use may build on existing research by providing a better understanding of the possible determinants of alcohol-use disorders and may help to tailor prevention interventions to adolescents of specific ethnicities. The adaptation of prevention interventions to a specific ethnic group requires an understanding of the group's unique pathways to alcohol use (Gottfredson and Koper, 1996). Despite the small ethnic group sizes in the current study, these findings begin to identify ways of focusing prevention programs to delay regular drinking in different ethnic groups. Prevention interventions for white and Hispanic adolescents may focus on addressing positive beliefs about the effects of alcohol, whereas programs for black adolescents may target populations in which conduct problems are more prevalent. Further examination of these and other ethnic group differences in the predictors of alcohol use, as well as their implications for prevention, is needed. Castro et al. (2004) recommend modifying prevention interventions to accommodate the needs and characteristics of specific ethnic populations. A cultural mismatch between an intervention and its target ethnic/racial population may reduce program effectiveness in achieving intended goals (Botvin, 2004; Castro et al., 2004).

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